

Cytology of Ascomycetes.—Miss FRASER and Miss WELSFORD have recently added another contribution¹³ to their important series on the cytology of the Ascomycetes. The present investigation deals with two additional Discomycetes—*Otidea aurantia* and *Peziza vesiculosa*. The authors have studied principally the triple reducing divisions in the ascus, and their observations accord in the main with those of HARPER on *Phyllactinia*. They find in these two species, however, intermediate conditions between the early pairing of the chromosomes in *Phyllactinia* and their complete independence during the stages preceding reduction in *Humaria*, as described in an earlier paper by Dr. FRASER. In *Otidea*, for example, the chromosomes do not pair till the prophases of the third (or brachymeiotic) division; whereas in *Peziza vesiculosa* they unite during the prophases of the second division in the ascus. This variation in the time of chromosome union, as described for these species, is compared in tabular form with the conditions which obtain in *Humaria*, *Galactinia*, and *Phyllactinia*.

The authors describe two phases of the reduction processes—the meiotic phase, embracing the first and second divisions in the ascus, distinguished in *Otidea* by four chromosomes and in *Peziza vesiculosa* by eight chromosomes; and brachymeiosis, involving the second reduction, when the two sets of post-meiotic chromosomes become separated during the third division, thus resulting in two chromosomes in *Otidea*, and four in *Peziza*. A definite synaptic contraction occurs in connection with meiosis, similar to that first described by HARPER in *Phyllactinia*; but, unlike the case in *Phyllactinia* and in *Humaria*, a second contraction takes place in the two forms studied at the beginning of brachymeiosis. The authors regard the presence of both meiosis and brachymeiosis as evidence of the occurrence of two fusions in the life-history of these forms; although in neither form were the first, “presumably pseudapagamous,” fusions found. Further confirmation of HARPER’S account of spore-formation is presented in that the authors find the spores delimited by the astral radiations. But they incline to the view that the rays represent, not active contractile fibers, but rather the paths of activity of an enzyme which is generated at the centrosome and which flows out equally all around the center, delimiting the spore by the chemical changes thus produced.—E. W. OLIVE.

Mitosis in *Funkia*.—An account of nuclear division in *Funkia* is given by Miss SYKES in two short papers,¹⁴ one dealing with the reduction division in the pollen mother cell, and the other with the somatic division as it occurs in the archesporial cells and in the ovary wall.

The results may be summarized as follows: (1) The nuclear reticulum in

¹³ FRASER, H. C. I. AND WELSFORD, E. J., Further contributions to the cytology of the Ascomycetes. *Annals of Botany* 22:465-477. pls. 26, 27. 1908.

¹⁴ SYKES, M. G., Nuclear division in *Funkia*. *Archiv für Zellforschung* 1:380-398. pls. 8, 9. fig. 1. 1908.

———, Note on the number of the somatic chromosomes. *Idem* 1:525-527. pl. 16. 1908.